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Vol. XXIII FEBRUARY, 1953 No. 2

REFINING THE HEALTH EDUCATION TEST

Item Analysis and Standardization

J. KEOGH RASH, HS.D.,

Chairman, Department of Health and Safety, School of Health, Physical Education, and Recreation, Indiana University, Bloomington, Indiana.

This is the second of two articles dealing with the topic of refining the health education test. The first article on "Development and Trial Application" appeared in the *Journal of School Health* in January, 1953.

Item Analysis

Item analysis involves two distinct approaches. The commonly accepted statistical approach must be supplemented by the logical approach. The teacher-made test for local use may well be subjected to intense study. The logical approach may be the more fruitful, particularly if the number of cases in the trial application has been limited. Furthermore, through introspection it may often be possible to improve an important, though seemingly poor, item and thus make it worthy of retention in the refined test. Of course, it should be emphasized that any such revised item should be further subjected to trial application before appearing in a so-called refined test.

The Statistical Approach. The statistical approach to item analysis involves identifying items which are not considered good items, the principal criterion in this instance being the discriminatory power of an item. A non-discriminating item serves no purpose in the test. Items, which are passed by everyone or failed by everyone, are immediately identified as non-discriminating items. It is commonly accepted that an item which is failed by more than 90 to 95 per cent of the testees is too difficult, and one which is failed by fewer than 5 to 10 per cent is too easy. This figure will be determined, in part, by the use which is to be made of the test.

The difficulty of an item is commonly expressed in terms of

the proportion, or percentage, passing the item. When thus expressed, the more difficult item is expressed by a small proportion or percentage. For example, an item passed by 10 per cent of the group is more difficult than an item passed by 40 per cent.

The writer favors the plan of expressing the difficulty of an item in terms of the percentage failing to pass the item. In this case an item failed by 10 per cent of the group would be less difficult than an item failed by 40 per cent.

Items which are failed as often by good students as by poor students or passed as often by poor students as by good students are considered poor items, since they fail to discriminate between the good and poor students. Similarly, items which are passed more frequently by poor students than by good ones discriminate adversely.

In order to isolate the valid items, as determined by comparing the proportion of the upper group and the proportion of the lower group passing an item, it is considered good policy to compare the approximately upper 27 per cent of the students with the lower 27 per cent. For the purpose of most tests, the difference between the proportion in the upper group who pass an item and the proportion in the lower group who pass the same item, should be at least three times the probable error (5 per cent level of confidence).

Votaw[1] describes a graphical means of determining valid items. The formula for drawing the so-called Votaw Curve is:

$$P_1 = \frac{2P_2 + h^2 \pm (8h^2 + 4h^4)(P_2 - P_2^2) + h^4}{2\ (1 + h^2)}$$

When:

P_1 = proportion of upper group answering item correctly

P_2 = proportion of lower group answering item correctly

$h = \frac{.6745\ K}{N}$ (Use 5 per cent level = 1.96 instead of .6745 . K)

K = desired number of probable errors (e.g. 3) hence

K = 5 per cent level of confidence or 1.96

N = number of upper or lower 27 per cent

This formula provides the necessary data with which to develop a table of specifications for determining the required proportion of persons in the upper group who must pass a valid item

1. Votaw, D. F., "Graphical Determination of Probable Error in Validation of Test Items," *Journal of Educational Psychology* 24:682-686, December, 1933.

when a given proportion of the persons in the lower group pass the item.

In order to plot the graph (Votaw Curve), it is necessary to locate from 10 to 18 points when N is 50 or less. The proportion of the lower group should be shown on the vertical axis, while the proportion of the upper group should be shown on the horizontal axis.

To determine the proportion of persons in the upper group who should pass a good item which is passed by a given proportion in the lower group, it is only necessary to follow the appropriate abscissa to the "curve" and then to follow the intersecting ordinate to the scale at the top of the graph. The figure thus determined shows the proportion of persons in the upper group which has been passed by the selected proportion of persons in the lower group, for the item to be a valid item.

When the valid items have been identified by the statistical method, there often remains much which can be done to improve a test. In items of more than two options, three considerations are essential:

1. Are all of the options being used?
2. Among the better students, is the correct option being selected more often than any of the distractors?
3. Is there gradation in the use of options with the best option being used most and the worst option least, except in the most difficult items?

The health education teacher can exercise considerable leeway in the matter of discarding or revising items which are invalidated by use of the Votaw Curve Graph. Such an item, if it is one which the teacher feels is important, can often be re-worded or reconstructed in such a way as to make it a good item. Introspection plays a prominent role at this point, particularly if some of the options are not being selected.

The Logical Approach. The logical approach, or refining the test through introspection, implies the necessity of discovering facts which are not revealed through statistical treatment. The necessity for revision of an option which is not functioning is an example of such an imperfection. Other qualities which may be revealed by critical examination of the items may be ambiguity, grammatical correctness, simplicity of statement, specificity of subject matter being tested, specific determiners, distractors which are not plausible, duplication, appearance of validity (face validity), curricular validity, and controversial items.

Final selection. Final selection of the valid items to be used will depend upon several factors. It is essential to retain the balance of the test; consequently, in order to sample some areas adequately, it may be necessary to use items which are not considered as good as other items in other areas. For example, in the health knowledge test, if a particular area such as nutrition has been assigned 8 per cent of the emphasis, while another area such as relaxation has been assigned 4 per cent, it may be more difficult to get 8 per cent of good items in nutrition than it is to get 4 per cent of good items in relaxation; consequently, it may be necessary to retain some items in one area which are not as good as some items which must be discarded in the other area.

Difficulty in Relation to Use. Generally speaking, if the test is to be used to rank a group from high to low, the distribution of the items by difficulty should follow the general pattern of the so-called normal curve with an average difficulty of 50 per cent. If the test is to screen out a few superior individuals the average difficulty should be greater than 50 per cent, while if it is to screen out a few inferior individuals the average difficulty should be less than 50 per cent.

The Final Step. The final step in refining the test is the establishing of norms. If the test is for local use only, this may be done as the test (or a revision of it) is administered from time to time. However, if the test is to have wide use, it becomes desirable to establish norms for the entire area of usage. As with the trial application, the extent of usage will determine the number of cases necessary to establish satisfactory norms. The number of cases should vary approximately in proportion to the area in which the test is used.

The reliability of the refined test may now be determined on the basis of the results of these applications of the test.

Conclusions. In conclusion, it is important to point out that a great deal of common sense must go into the construction and refinement of the health education test. The original construction of the test is fraught with difficulties, partly because of the controversial nature of much of the material and partly because our testing procedures and instruments make it extremely difficult to test many of the more desirable outcomes in this area. Statistical techniques are important in the process of refining the test, but let us not lose sight of the fact that *no amount of statistical treatment can create a truth out of a falsehood.*

In the last analysis, the quality of the health education test will be determined by:

1. The extent to which the test is in line with instructional objectives
2. The adequacy of the sampling
3. The specificity of materials tested
4. The quality of the individual items including validity, reliability, and objectivity
5. The appropriateness of the vocabulary, i.e., vocabulary burden
6. The appropriateness of the difficulty of the items
7. Adequacy of directions and provisions for administering the test

Finally, when the test is constructed and refined to meet these criteria, it follows that it must be used wisely if it is to serve the purpose for which it is constructed. It should be emphasized that testing is not an end in itself and that one of the many important purposes of testing is to furnish a partial basis for evaluation.

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* * *

Minnesota,—Psychiatric Unit for Children.—A twenty-four bed psychiatric unit, financed by a $115,000 grant from the state, has been established at the University of Minnesota Hospitals. The new unit will operate chiefly as a diagnostic center for the study of children with severe mental and emotional disturbances. *Journ. A.M.A.*, Dec. 6, 1952, p. 1409.

STUDY OF PROCEDURES USED FOR SCREENING ELEMENTARY SCHOOL CHILDREN FOR VISUAL DEFECTS: REFERRALS BY SCREENING PROCEDURES VS. OPHTHALMOLOGICAL FINDINGS

MARIAN M. CRANE, M.D., RICHARD G. SCOBEE,* M.D.
FRANKLIN M. FOOTE, M.D., and EARL L. GREEN, Ph.D.

This study was carried out with the joint support of the National Society for the Prevention of Blindness, the Children's Bureau of the Federal Security Agency, the Division of Health of the State of Missouri, the St. Louis Board of Education, the Department of Ophthalmology, Washington University School of Medicine, and the Office of Naval Research.

(*Continued from January*)

The Ortho-Rater, Sight-Screener and Telebinocular Tests correctly referred 23 to 25 per cent of the sixth-grade students, or about three-fourths of the 31 per cent referred by the ophthalmologist. This is a high proportion of correct referrals as compared with most of the other procedures. But these tests referred incorrectly an even larger number of students, about 30 per cent of all sixth-grade students. The total referrals amount to at least half the students tested.

When the manufacturer's standard for referral is used with the Telebinocular, correct referrals of sixth-grade students are about the same as those by the Ortho-Rater and Sight-Screener, but there are slightly more incorrect referrals. With the Study standard, the correct and incorrect referrals are both in about the same proportion as those by the Ortho-Rater and Sight-Screener.

Telebinocular testing of first-grade students by the technician gave results very similar to those he obtained for sixth grade, but with somewhat fewer incorrect referrals, especially when the Study standard for referral is used. The nurse's Telebinocular Test referred many more students from first grade than the technician's, and most of these were incorrect referrals.

The difference between the results obtained by the nurse and those obtained by the technician suggests that Telebinocular testing of first-grade students can only be done efficiently by an experienced tester.

The combination of three procedures—high standard Near Vision Test, high standard Snellen Test, and Teacher Judgment—gives results similar to those obtained with the Ortho-Rater, Sight-Screener, and Telebinocular. About three-fourths of the students who need care are referred, but the number of incorrect referrals exceeds the correct referrals. Incorrect referrals of first-grade stu-

* Deceased.

dents are especially high—35 per cent of the entire class and about twice the number of the correct referrals.

The Massachusetts Vision Test, and the combination of high standard Snellen with Teacher Judgment, both correctly refer about two-thirds of the students who need care. While this proportion is not quite so high as was obtained with most of the procedures discussed previously, there are fewer incorrect referrals. This is particularly true of Massachusetts Vision Test incorrect referrals which, for sixth grade, are between half and two-thirds of the number of correct referrals, while for the first grade correct and incorrect referrals are in about equal proportions.

The nurse and technician are apparently equally efficient in administration of the Massachusetts Vision Test.

The correct referrals by a combination of the high standard Snellen and high standard Near Vision Tests are about the same as those by the Massachusetts Vision Test. The technician referred fewer students incorrectly with this combination of tests than with the Massachusetts Vision Test, but the nurse had more incorrect referrals from the Snellen-Near Vision combination.

The nurse's low-standard Near Vision Test, combined with the teacher's Snellen, gives a few more referrals than the Snellen alone, but they are about equally divided between correct and incorrect referrals. The only effect of adding the technician's referrals by the low standard Near Vision test to those by his Snellen Test is an insignificant increase in the incorrect referrals as compared with the Snellen alone.

The three different testers all obtained very similar results with the Snellen Test. When the high standard is used for referral, the Snellen Test correctly refers about half of the students referred by the ophthlamologist. It misses 10 to 20 per cent more of the students who need care than does the Massachusetts Vision Test, but it refers only about half as many incorrectly.

When the low standard is used for Snellen Test referral the incorrect referrals are reduced to only 1 or 2 per cent of the entire group. But with this standard the Snellen Test selects for referral only about one-fourth or less of the students who need care.

Teacher Judgment as applied in this study referred correctly 10 to 13 per cent of the students, about two-fifths of those referred by the ophthalmologist. But it referred incorrectly a considerably larger number—19 per cent of all the students tested. This is partly responsible for the high proportion of incorrect referrals

from the combinations of Teacher Judgment with other tests which have already been discussed.

Those who advocate inclusion of a test of near vision in a screening program suggest that it be used in combination with other tests, not as an independent screening procedure. It is interesting therefore to find that the high standard Near Vision Test alone refers correctly more students than the low standard Snellen Test and almost as many as the high standard Snellen. It gives more incorrect referrals, however, and in first grade there is less consistency in the results obtained by the different testers.

The Near Vision Test, low standard, refers only about one-fourth or less of the students who need care. As has already been indicated, it adds little or nothing to the efficiency of the high standard Snellen Test when the two are combined.

Time Study

To obtain data on the time required to administer the screening procedures, two testers were timed while testing groups of seventh and second-grade students. Conditions were arranged to simulate those of a screening program in a school.

Since the time required for getting the student settled in the proper position for testing and that needed for recording the measurements may vary with different procedures, the time for each test was measured from the moment when a student, readily at hand, was called by the tester to the moment when the next student was called. Identifying data had been entered on record forms by assistants, so the tester recorded only the test measurements.

The methods of administering the Telebinocular, Ortho-Rater, and Sight-Screener Tests were the same as elsewhere in this study. The Massachusetts Vision Test was considered completed at any point where the student gave an unsatisfactory response, and the simple record form usually used for recording results of this test was substituted for the more elaborate form used in other parts of this study.

A separate Snellen test was not timed, but by timing separately the first part of the Massachusetts Vision Test an approximate measure was obtained of the time needed for a test in which the student is required to read only one of two critical lines of a Snellen Chart. Probably a few seconds longer would be needed for a Snellen Test since the time measured for the first part of the Massachusetts Vision Test does not include dismissing the student.

Testing was done by two experienced testers. The knowledge that they were being timed influenced them to work rapidly, so

they may have set a pace somewhat faster than could be maintained over a longer period of routine testing.

The findings from the Time Study are presented in Table II. For seventh grade the results obtained by the two testers differ significantly, but the differences were small and probably not of practical importance. For second grade the results obtained by the two testers were very similar and are therefore combined in the table.

Differences in the time required to administer the Ortho-Rater, Sight-Screener and Telebinocular Tests are probably of little practical importance. But it takes 2 to 3 times as long to give these tests as to give a Massachusetts Vision Test, and the total Massachusetts Vision Test requires about twice a much time as Part I alone.

Discussion

It is evident from the data reported that none of the vision-testing methods studied provides more than a rough screening procedure.

The findings of the study show what may be expected from the various screening methods, but they do not permit a conclusion that any one procedure or group of procedures is superior to the others. The screening program that is best in one situation may be less suitable for another.

The choice of a procedure will be determined partly by the purpose of the program. In one situation, as with the testing of poor readers, the purpose may be to obtain the maximal assurance possible that the students who are not referred do not have visual defects. In this case the procedures that give the highest per cent of correct referrals might be preferred, even though they result in a large proportion of unnecessary referrals.

In another situation it may be preferable to use a procedure that gives fewer over-referrals even though it misses more of the students who should be referred.

Recognition that any procedure which refers half or more of the students who need care will give a high proportion of unnecessary referrals may point to a need for education of the community as to what can be expected from a screening program. School health authorities and eye specialists can cooperate in helping parents to understand this. Testers, nurses, teachers, or anyone who informs parents of the results of a screening test should be well-informed as to what a referral by that test may mean and should

TABLE II

Time Required to Administer Specified Tests

	Seventh-Grade Students					
	Tester A			Tester B		
	No. of Students	Mean (Minutes)	Range (Minutes)	No. of Students	Mean (Minutes)	Range (Minutes)
Ortho-Rater	20	5.6	5.2–7.0	20	5.8	4.0– 9.8
Sight-Screener	20	5.8	4.6–8.0	20	7.1	4.5–10.6
Telebinocular	20	6.3	5.0–8.3	15	6.5	4.0–10.7
Massachusetts Vision	30	1.7	0.6–3.1	30	2.6	0.5– 4.5
Part 1 of Mass. Vision	30	0.9	0.5–1.4	30	1.2	0.5– 2.8

	Second-Grade Students		
	Testers A and B		
	No. of Students	Mean (Minutes)	Range (Minutes)
Telebinocular	40	8.1	5.6–11.3
Massachusetts Vision	60	2.8	0.9– 5.0
Part 1 of Mass. Vision	60	1.2	0.5– 3.3

make this clear to the parents. Positive statements that a child has a visual defect are not justified on the basis of a screening test and may destroy confidence in the whole program.

In the study the different testers obtained fairly consistent results on sixth-grade students with all of the tests, which seems to suggest that it is not necessary for the tester to have elaborate training in the testing procedure or long experience with it in order to test this age-group successfully. With first-grade students the same was true for the Snellen and Massachusetts Vision Tests, but there was less consistency in the results obtained by the nurse and technician from Telebinocular and Near Vision Tests at this age level. It may be a characteristic of these tests that they give less consistent results on beginning readers. Or it may be that these tests can be given to beginning readers more successfully by a tester with considerable testing experience.

In general, the results obtained from the testing of first-grade students are enough like those for sixth-grade students to support the belief that screening programs for beginning readers are worth doing.

It is obvious that the way is still open for considerable improvement in procedures for screening elementary school children for visual defects. The many factors involved make the problem extremely difficult. The efficiency of a screening procedure depends in part on the visual factions tested and the accuracy of the methods of measurement possible under ideal conditions and in part on the degree to which the tests are suited to the non-visual capabilities and motivations of the subject. A

child may, for example, see a test target perfectly but give an unsatisfactory response if he does not understand what is expected of him, if a sense of frustration leads to poor cooperation, or if the duration of the procedure exceeds his normal attention-span. The efficiency also depends on whether or not the procedure is simple enough not to require elaborate training of the tester.

Selection of the most appropriate standards for referral is another factor that affects the efficiency of a screening procedure. The method used in this study for developing such standards should —when the later report makes the details available—provide a basis for further study in this area.

It is hoped that the findings of this study will not only be of immediate usefulness to school health authorities in the selection of the screening procedure most appropriate to their programs and in understanding the probable significance of the results of the tests, but will also help to build the foundation for further investigations.

ACKNOWLEDGMENTS

Space does not permit making individual acknowledgment of the important contributions made by the many persons who participated in the conduct of this study. Special mention should be made, however, of the cooperation given by the St. Louis Board of Education and its administrative staff, particularly the Director and other members of the Division of Health and Hygiene, and by the principals, teachers and students in the schools in which the study was conducted. This cooperation left nothing to be desired and without it the study would not have been possible.

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Reprints of these references are available, while the supply lasts, from the Children's Bureau, Federal Security Agency, Washington 25, D. C.

A description of the methods of this study and tabulations of basic statistical data will appear as a publication of the Children's Bureau.

* * * * *

DUES,—Within the last four weeks the only state that was using the privilege of withholding a part of the National dues to be used by the State Association has yielded that privilege, so that now all states are on an equal footing.

OUR NEW PRESIDENT, 1952-1953

GUY N. MAGNESS, B.S.E., M.D.

Director of Health Services, University City Public Schools, University City, Missouri.

Born, Lead Hill, Arkansas, November 20, 1899. Received the degree B.S.E. from the University of Arkansas in 1924. Graduated from Washington University, St. Louis, M.D., 1928. Interned Missouri Baptist Hospital, one year, St. Louis, Missouri. Residency in surgery, Barnard Free Skin and Cancer Hospital, one and one-half years. Appointed Director of Health Services, University City Public Schools, January 1931. Served in United States Army, June 1941 to September 1946. Assigned Fort Leavenworth; to Surgeon General's office, Seventh Service Command, Omaha; to Personnel Director's Office, Seventh Service Command. Appointed Director of Health, University City, November 1952.

Member, St. Louis County Medical Society, and American Medical Association; Fellow, American Public Health Association. Member of the St. Louis, the Missouri, and the American Academy of General Practice. Member of the American School Health Association since 1935. Recently installed as President of the St. Louis County Medical Society as of January 14, 1953. Secretary-Treasurer of the Alumni Association of the Washington University School of Medicine.

Became President of the American School Health Association for the term of office 1952-1953.

SCHOOL HEALTH SERVICES*

Second Section

CHARLES H. KEENE, M.D.

Clinics

As the number and success of school physicians and school nurses increased, larger numbers of children were found having physical handicaps.

While, with the advent of nurses into the program, a greater percentage of children and parents were persuaded to have remediable handicaps corrected, nevertheless there were many children whose parents could not finance adequate treatment, and in some areas facilities for corrections did not exist. Some provision had to be made for these children.

Yielding to humane feelings and pressure from parents and various social minded persons and groups, the schools began to establish and maintain clinics for treatment or removal of handicaps. Some of these existed but a short time. Two types persisted and still function—dental clinics and ophthalmological—largely perhaps because part of the dental clinic program, prophylaxis and cleansing, may be considered education; and improvement of vision certainly is. These phases have to do, too, with habit formation and in many cases are extremely expensive. The present concept of the ophthalmological clinic is so technical, and both the examination and the treatment—whether the provision of lenses, or medical or surgical treatment—so expensive that many parents could not finance it.

The treatment phase of the dental clinic is disappearing with the growing concept that treatment is not the function of the Board of Education.

The school opthalmological clinics, of which the ones in Philadelphia are an outstanding example, are wholly reference clinics to which district school physicians refer the more technical cases, and by means of which prescriptions are made and glasses provided; work which the district school physician is not authorized nor equipped to do.

Sequent to the Pennsylvania law of 1945, the present Eye Program in Philadelphia began its development in 1946. This is in two types, (1) the efforts of the district school physicians—largely a screening test; (2) eye clinics—four fully equipped, one diagnostic center, and eleven cooperating Philadelphia hospital units. To the designated eye clinic of this second group, referred children are brought by the school nurses.

*Continued from January.

School Dental Service—Apparently the first dental clinic dispensary in America for the treatment of the poor, was established in 1791 in the City of New York.[12] In 1849 another (a dental infirmary) was established by the Society of Dental Surgeons of the State of New York. In 1861, a dental dispensary was put into operation at the Charity Hospital in Philadelphia. In 1867 a dental clinic was opened in Boston. A Committee on Oral Hygiene was appointed by the National Dental Association—forerunner of the American Dental Association—in 1900.

The concept was growing that the area in which to conserve the stream was near its source—among the children. In 1909, in Cleveland, with the aid of the Dental Association's Oral Hygiene Committee, there was launched a school dental program for children. Following successful results there, similar programs were started in other communities. In Rochester, N. Y., in 1911, the Dental Society started a school dental hygiene program. The late George Eastman endowed the Rochester Dental Infirmary, and later similar programs were established in London, Rome, Paris, Brussels, and Stockholm.

In this country, the Forsyth Dental Infirmary for Children was established in Boston in 1910. Later endowed clinics were developed in the City of New York and in Chicago.

These efforts were privately financed, but other school dental health programs were supported by public funds: namely, Cincinnati, 1910; New York, 1910; Chicago, 1913; Bridgeport, Connecticut, 1913; Peoria, 1918; Lake Forest, Illinois, 1919, and Atlanta Georgia, 1921; these being initiated largely by local dental societies. By 1937 over 300 cities of 2500 or more population had established school dental programs.[13] Various states came into the picture, and at present 46 states and three territories have school dental health units.

The dental hygienist movement, largely paralleling the growth of school dental programs, was initiated by Alfred C. Fones,[14] although the basic idea dates back to the early 1880's, when it was suggested that women be trained as dental nurses. Fones was the first to inaugurate the first school for dental hygienists. Later, in 1913, he obtained a $5,000 appropriation from the city of

12. Weinberger, B. W., *History of Dentistry*. St. Louis: C. V. Mosby, 1948. 2:269-282.

13. *Survey of Month Hygiene Programs for School Children*. Journal. A.D.A., 27. 152. 1940.

14. Salzmann, J. A., *Principles and Practice of Public Health Dentistry*. Stratford Company, p. 83.

Bridgeport, Connecticut, to establish a school dental clinic and educational program. In November of that year, he opened the first school for dental hygienists.

State laws controlling dental practice rather generally forbade the practice of dentistry except by licensed Doctors of Dentistry. Massachusetts, in 1914, was the first state to license dental hygienists. Today all 48 states permit qualified dental hygienists to practice in their field.

In our more progressive states, the dental hygienist has become a most potent force in educational dental hygiene. In the state of New York there are more than 300 dental hygiene teachers employed in the schools, and some 230 dentists.

The tendency now is away from the dental clinic——in the ordinary meaning of clinic—in the schools, since the feeling of educators is rapidly trending to the concept that it is not the function of the Board of Education funds to support physical treatments.*

Classes for the Handicapped

As health efforts in the schools continued, it was found that —no matter how eager and skilled the services of physicians and nurses, dental staff and clinics were—there were large numbers of children suffering handicaps that could be arrested or cured only after long effort, and some could not be cured at all.

To meet this situation, the more alert school health services and the more social minded Boards of Education began to classify these children and gather them into groups or classes for special education, treatment, or both, as the need might be.

These segregations began to appear at about the end of the nineteenth century, in fact, only a few years after physical examination of children began to emphasize that there were in the aggregate many thousands of largely neglected children who not only were getting a very inadequate education, but were by their presence in groups of normal children interfering with the instructional efforts of the teacher and with the progress of the group.

These classes were expensive. The teacher usually had special training, received a higher salary than the teacher of regular classes, and few pupils could be put in a class. State aid, usually on a per capita basis, became necessary to support these classes.

The open air school—In 1900 tuberculosis, while in retreat before the educational and physical campaigns being waged by the National Tuberculosis Association and by public and private

* Except in the field of Physical Therapy.

health agencies, still was causing a death rate of 200 (plus) per 100,000 per year, and was the leading cause of death in the United States.

At Charlottenburg, Germany, in 1904, appeared a new type of school, carried on in the open air; to which there was given the title of "open-air-recovery school." This school was designed for backward and physically debilitated children who, while not mentally deficient, could not keep up with the work in the regular schools.

The results were most gratifying. These children made wonderful physical gains, increasing rapidly in strength and weight, and many serious ailments were corrected. Moreover, they kept pace scholastically with the classes from which they had been taken. The movement spread throughout Germany.

London opened its first such school in 1907, and other English cities followed.

The first open air school in the United States was opened in 1908 at Providence, R. I. The next was in Boston, established in 1908, on the roof of the Refectory in Franklin Park; next, New York, in 1909, on a ferry boat in the harbor; and then Chicago, in 1909, on the grounds of one of the public schools.[15]

Soon a large proportion of the cities were maintaining open air classes in their schools. To be without one was *declassé.*

The success of these schools led to a modification which was a part-way step from the regular classroom—at that time often wretchedly ventilated—but not actually an open air school. This was the open-window room. The regular air intake was covered, the windows were kept open and the children were issued warm "Eskimo" suits. The results from these rooms were gratifying; gains in weight, better class work, and more vigorous children resulted. School administrators and teachers were learning that there is magic in fresh air.

By 1940, the open air school had served its purpose and was outdated. The National Tuberculosis Association, which had fostered them, withdrew its urgence and these schools have disappeared.[16]

Today, the nearest approach we have to these modified environments and programs is the Nutrition Class, based on the

15. Ayres, L. P., *Open Air Schools.* Garden City, New York, Doubleday, Page and Company, 1910.

16. *The physically Below-Par Child—Change in Concepts Regarding This Care and Education.* Published by the National Tuberculosis Association. 1940.

idea that the chilld must be free to gain—that is, must have his remediable handicaps corrected, and that the diet of the child must not only be ample, but balanced, and carrying adequate amounts of carbohydrates, fats, proteins, mineral salts, and vitamins. These classes are not only health builders, but educational to teachers, children, parents, and communities.

There are several reasons why the open air school, as such, has disappeared from the school health service program:

(1) When we first began to advocate and set up open air schools, largely from the point of view of checking tuberculosis in children, the death rate from tuberculosis in the United States was nearly 200 per 100,000. During the first decade of this century and the years following, this death rate diminished enormously. In 1913 tuberculosis ceased to be the leading cause of death in this country. By 1922 the rate had been cut down to 100 per 100,000; and at the present time the rate has been miraculously diminished to below 20 per 100,000, and tuberculosis is now far down the list of the causes of death in the United States.

(2) In the decade beginning 1910 a large part of the energies of the tuberculosis associations—national, state, and local—became devoted to efforts to provide local sanitoria, largely on a county basis, and as these became developed, children and others already infected were admitted to these sanitoria where comparative isolation was possible, and it is now a practice in many of these institutions for the Board of Education, either of the county or that of the nearest large school district, to gather these children into classes and to send to them a teacher, so that isolation, curative procedures, and education now go hand in hand under careful medical and educational supervision.

The attitude of primitive and ancient peoples towards the handicapped has wholly changed from ridicule, or even destruction, to our modern concept of conservation, cure, and education.

In recent years the great development has been in improvement of organization and efforts more than in method, except in the field of orthopedics.

The Hard of Hearing and Deaf—The early eighteenth century saw the beginning of organized schools for the deaf, usually, as has been the case in nearly all advances in education, at the behest of some great leader.

These early schools began with using the oral method, but mass teaching brought about the use of the manual method. Bitter strife between the supporters of these two methods was current

at the beginning of this century, but the trend was almost totally toward the oral, often mandated by law when these classes became largely supported by state aid.

In the United States, Dr. Alexander Graham Bell was the outstanding person behind the advances in the education of the deaf.

The first school for the deaf in the United States was the Horace Mann in Boston, established by Act of the Legislature in 1869. Early public day schools or classes for the deaf were: Cincinnati, 1886; Cleveland, 1893; Chicago, 1905; Sacramento, 1907.

From these beginnings the special public school training for deaf children has increased to 158 public day classes in the United States. Speech and lip reading are taught in most of these special classes.

There also are operating Mobile Speech and Hearing Clinics in fourteen states; six are carried on by the State Department of Education; four by the State Department of Health, and four by the National Society for Crippled Children and Adults.[17]

The first public school lip reading class was established in Rochester, N. Y., in 1916; the second in Lynn, Mass., in 1918. Today lip reading and speech are taught in most of the schools for deaf children in the United States.

By 1950 there were lip reading classes in 220 communities in 47 states and Hawaii.

The use of the audiometer has been of great value in helping to find those with hearing difficulties, especially in school masses.

Speech Handicaps—Efforts to provide for the correction of speech difficulties began in this country in Wisconsin in 1885. The Board of Education of Minneapolis began a class for "stammerers" in 1909. A Department for speech correction was started in the City of New York public schools in 1912—the first in the United States.

The Crippled Child—At one time,, in the great majority of cases, crippling was a life-long handicap, and the individual's only future was as a beggar or as a dependent. Crippling is becoming more temporary as treatment becomes more skilled and more persistent. The improvement in orthopedic care and in physical medicine has been enormous, in the last thirty years particularly.

About 1914 the characteristic home institutional and hospital

17. American Annals of the Deaf 96.1. January, 1951.

care of the crippled child began to change, and the care began to shift to special classes and schools in public schools. A few cities care for these cases in units in regular school buildings. In some notable cases, however, they are cared for in special buildings under Board of Education maintenance and supervision.

Cardiac Cases—It has become the common arrangement to care for children with pronounced cardiac disabilities in the same classes as the orthopedically handicapped. Transportation, food, nursing care, medical supervision and ramp construction all are available there.

School for Crippled Children—As an outstanding example of the scope and accomplishments of a public school special class school for crippled children, the following description is presented:[18] Spalding School is located close to the medical center of Chicago's "Great West Side." Here, children from the nursery through high school, to the total of more than 1200, are educated and cared for both physically and mentally, in a school built and equipped especially for them.

The elementary school has an enrollment of approximately 800 children. Because of the necessity of emphasizing physical activities and exercises, it boasts a very large woodshop, clay modelling, and a shoe repair shop. Classroom instruction, as well as music and art, is conducted according to the same plans and program as in other public schools.

Children report to the treatment center, pools, rest-rooms, etc., as a regular part of their program. Regular hours for treatment are assigned when the hours for academic work are assigned. Treatment must always take precedence over other work.

The high school is housed in a new wing of the building. In 1943, Spalding High School was placed on the accredited list of high schools.

A Nursery Class is conducted for children from two and one-half to four years of age. A rest room adjoins the nursery, where the children from the two kindergartens and nursery rest. Movable cots are provided.

A special room is equipped for feeding spastic children. The physiotherapists from the nursery, kindergarten, and primary rooms assist in the feeding. Babies from all over the city are eligible. These children are "picked up" by the busses, which cover the entire city for the high school service.

18. Abstracted from "Some Oustanding Features in the Education of the Handicapped at Spalding School, Chicago, Illinois," by Celestine Igoe. *Journal of School Health*. Vol. 15, No. 10, p. 243. December, 1945.

An outstanding educational arrangement in the city of Chicago is the provision for the child who is hospitalized. The Chicago Board of Education has placed regularly assigned elementary and high school teachers in practically every hospital in the city.

All pupils registered at the school are there at the request of medical authority, to whom the children are returned at intervals for consultation and treatment. For the most part, these visits are supervised by the school.

The school busses are always available for taking children to any clinic or doctor. A trained attendant goes with the child, a physiotherapist or trained nurse.

For the care of the cardiacs, the Heart Association arranges with the Chicago Health Department to assign two nurses. These nurses supervise the recording of pulses and temperatures of all cardiacs before school each morning. They also assign rest periods under the supervision of a heart specialist, who spends one day each week at the school.

Dining room and kitchen staff are appointed by the Board. Each morning before class work begins pupils are served hot cocoa, milk, and whatever food may be requested by the staff. Cod liver oil is also dispensed at this time to those for whom the doctors recommend it. Special diets are served at the diet tables during lunch hour and during the day, according to doctors' orders.

Sight Saving Classes—The first two public school classes for partially seeing children were established in 1913: one in Boston in April; and one in Cleveland in September. These operated on somewhat different procedures. The one in Boston, in a public school building, was a segregated class, the children attending the special class throughout the school day. Their contact with other children was only outside of school hours. The class in Cleveland was started on the so-called cooperative plan. Children assigned to the group used the special facilities only for close eye work and worked with normally seeing children for other phases for the programs.[19]

This Cleveland type of class fits the newer philosophy of educating children with handicaps. It is thought better to place the partially seeing child in his regular grade room for most purposes, but when close use of the eyes is needed, he goes to the

19. Information and data contributed by Marjorie A. C. Young, Consultant in Education, National Society for the Prevention of Blindness.

specially equipped sight conservation room. The regular grade room is his "home" room and he is carried on the teacher's roster of that room.

The special teacher must be well qualified and an understanding person, as must all the regular grade room teachers and the principal of the school in which such a class is located.

As of December 1951 the register of the National Society for the Prevention of Blindness carries a list of 681 classes for partially seeing children, located in 245 cities and 37 states, the District of Columbia, and the Territory of Hawaii.

The Mentally Retarded—Throughout the ages these, except perhaps for the insane, have been most abused. Change began about a hundred years ago. From 1846 to 1881, thirty-five institutions for the feeble minded were established in Germany. The rest of Europe and England followed suit. In 1859 special classes began to appear.

In the United States a private class was started in South Boston in 1837, and in 1848 Massachusetts established the first state institution. Special classes for the mentally handicapped were an outgrowth of classes for the incorrigibles and truants. The first public school class for teaching the mentally deficient was in Providence, R. I., in 1896. By 1902, six other cities followed, and by 1911 such classes were reported by 220 cities. At the present time (1951) there are approximately 750.

Special Schools and Classes in City School Systems:[20]

Blind and Partly Seeing	265
Deaf and Hard of Hearing	288
Speech-Defective	455
Crippled	960
Delicate	550
Epileptic	65
Mentally Deficient	730
Socially maladjusted	90
Mentally gifted	15

20. Office of Education, Federal Security Agency. *Statistics of Special Schools and Classes for Exceptional Children.* 1947-1948 Biennial Survey of Education in the United States, Chapter 5.

(*To be continued in March*)

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Reprints,—Orders for less than one hundred reprints of articles appearing in the Journal cannot be accepted. Fixed charges of the printer are just as great for 25 or 50 copies as they are for 100. This makes the cost of small lots prohibitive. Editor.

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EDITORIAL

A problem intimately concerning parents, pupils, and school personnel is being pushed to the fore by publicity hounds, many of them school administrators, physical education teachers and directors, and coaches—some of them in the recreation field.

The problem is the effort to push back the age at which boys are permitted, encouraged and coerced to engage in body contact teams games on the interscholastic level, particularly basketball and football.

In many areas, the situation was not good even when only senior high schools were concerned. For twenty-five years sports writers of the junior type and pool hall coaches have been pushing, pushing to get these games back into the junior high schools and on an interscholastic basis. It has become so bad that at least one State Department of Education is making an intensive study of the situation, and of the scientific literature available on the physical, mental and ethical dangers involved with the intent to issue a directive that will put definite restraint on this sacrifice of young boys to a "Roman Holiday" for unbalanced overenthusiasts, and, yes, for fatter gate receipts.

Still not satisfied, these exploiters of children are pushing back against even younger ones. Recently this office received a letter from a school nurse in the midwest asking for literature to be used to try to dissuade an elementary school principal from organizing interscholastic football for 4th, 5th, and 6th grade boys.

Is such a principal a fit person to have charge of the mental and physical destiny of 10-12 year old children?

As evidenced that this is not an isolated case—we have information that the disease is in epidemic form in Washington, D.C., and in Maryland. Small private schools are competing against large ones, and ten year olds of average size and strength are being thrown into the pit against larger and older boys from larger schools which have squads large enough so that frequent substitution is possible and is used—while the smaller underdog has to play throughout the game and to exhaustion. "What price glory."

During Christmas week the Washington Star (December 25, 1952) carried an item that a group of children (boys) ages 10-13 years and weigh 70 pounds to 109 pounds were leaving that night for Florida for the Santa Claus Bowl where there would be in competition teams from Green Bay, Wis., New York City, and Wilson, N. C. To be eligible players "must not have reached their 13th birthday and weigh less than 110 pounds." We wonder if they have aped the universities so far as to receive a salary for playing.

As a physician this writer is curious also as to what protection these immature boys get; protective clothing, length of periods, careful pre-season and pre-game physical examination, care of injuries, return to competition after illness or injury, presence of a physician during games, and other guards that an informed individual with a conscience would set up to protect from careless exploitation the children entrusted to him.

This situation goes much deeper than mere age and weight: the possible permanent injury to a rapidly growing untoughened heart, to an easily overstrained kidney, to joints not as adequately reinforced against injury—perhaps permanent injury—as they will be after the age of sixteen.

Any school fostering an athletic program even the intramural type (and this is the only program that should be permitted in the elementary grades) should procure the regular services of a school physician and the advisory serives of a pediatrician and an orthopedist.

If school administrators do not know enough or are too timid to check this dangerous situation, it is time that the parents and physicians step in and guide the school personnel to more sane and healthful programs in physical activities. If the personnel are recalcitrant or so ignorant that they do not organize a safer program, let the parents procure a new set of administrators. —*C.H.K.*

ABSTRACTS AND NOTES

Health Services Are Health Education—*C. Morley Sellery, M.D.*,—For many years there has been considerable confusion as to the educational nature of health services. There are those who have maintained quite stoutly that services are services and health education is health education and never the twain shall meet. This point of view appears to me to be based on a totally inadequate concept of the nature of health services. Actually, health services and health education are inseparable and mutually supportive. Neither exists in any degree of efficiency without the other.

The value of the school physicians' services to the schools depends on whether the examination is an educational experience. Was each child motivated to do something about the physician's findings? It is here that the nurse, the health coordinator, the counselor, and the classroom teacher take over the health education of the child and, in most instances, also of the parents. Without the cooperation, interest, and understanding of the parents, the physician's recommendations will not be followed nor will poor health habits be changed. This, too, is an educational process. The idea that health education takes place only in the classroom during a period of health instruction is a complete fallacy. Health education takes place most effectively where a need is felt and an interest developed. Both of these factors are present at the time of a physician's or dentist's examination or at a nurse's conference or inspection. This is the ideal teachable moment, a time when ideas of healthful living can be implanted and health guidance not only given but accepted.

It is in this area that the school nurse renders one of her most educational services. Each health conference is an educational service related to the immediate health problems of the children under her supervision. Truly, health services are health education!

Morning inspection of pupils by the classroom teacher is also an educational procedure of great value. Not only does the discovery of a child in the early stages of an acute communicable disease give protection to the other children, but it dramatically brings to the children's attention the seriousness of exposing other people to infection and the importance of early care and treatment.

Other phases of the school health program also point to the health education nature of health services. If the physician, when he first discovers a health defect takes time out to impress the child with the importance and value of correction, this is health education. The examination itself is but the preliminary phase of a health education experience. If this health service had not been

educational and if no educational follow-up occurred, a health service had not been rendered. Would it not have been a waste of time and funds if the child had not been motivated to have a deep desire for excellent posture or to achieve the best physical development of which he is individually capable? The parent or guardian must, of course, be included in all these educational experiences if effective corrective action is to result, especially in those instances where surgery or corrective procedures by family physicians are indicated.

There is probably no field where good results depend more on inspired teaching than in the area of corrective physical education. Unless children with orthopedic and posture defects have a strong desire for improved development, exercises are futile. There is also no area where accurate diagnosis is more essential. Poor posture may be only a poor habit pattern, but it is usually a symptom of chronic fatigue or malnutrition or of other physical or developmental problems such as poor eyesight, impaired hearing, or even of mental or emotional difficulties.

The health coordinator has an important responsibility in making health services as well as health instruction operational. Classroom teachers, counselors, and other school personnel in the busy rush of school activities, are sometimes uninformed of the services and educational efforts of other health staff members on behalf of individual pupils. Without the health coordinator, lines of operation and communication between health services and health education often break down. The health coordinator restores the lines of communication and gives continuity to the health program. He is major factor in coordinating health services with the health instruction program and assists in utilizing the health education values inherent in health services. The school health program is alive and dynamic only if health services are educational in purpose and accomplishment. Briefed by G.E.C. from *Health Education Journal*, Los Angeles City Schools.

* * * * *

Public Health Reminiscences,—The best document on the status of public health in 1913 is Chapin's report on the state boards of health, made for the American Medical Association. It caused a public scandal. Its publication was delayed for three years. When it finally appeared in print there was a furor of criticism. One of the state directors of health bought up all the copies he could lay hands on and burned them. The report is hard to find now.

In this report, Dr. Chapin attempted the first rating ever made of health organizations. He listed 35 activities, adding up to 1,000 points. Thus the states were for the first time compared with each other, and with perfection. Massachusetts was the highest with 745 points, though marked zero in eight activities. Only six other states had passing marks with 500 or more points: these were New York, Pennsylvania, Minnesota, New Jersey, Indiana, and Maryland. The rest trailed behind, with seven below 100, and New Mexico brought up the rear with zero.

West Virginia is a good example. The state health budget was $2,500; there was no sanitary control of water or food, no laboratories, no distribution of biologics, no vital statistics or anything else. Most of the states had been in the same situation before 1900. There were no trained health officers, and of course an untrained health officer follows; he does not lead. If he is well intentioned he follows the unbalanced amateur reformers, if venal he follows the corrupt politicians—both equally dangerous. Hook worm was unheard of a rather high incidence of typhoid was considered "normal"; tuberculosis was fought in the sanatoriums. Trudeau started this idea. (He was a fibrous case himself, and they do very well in sanatoriums. They live a long time.) Roseau's crusade was for pasteurized milk, but it was frowned upon by health officer's and physicians alike. They recommended raw milk, and because of the danger of tuberculosis, goats were imported into the United States from the Mediterranean region, introducing Malta fever.

There are some amusing points about individual states; I have time for only a few.

Alabama: The board of health was the state medical association and the county boards of health were the county medical societies.

Connecticut: The health officers were mainly lawyers. Since public health was the enforcement of laws and regulations, lawyers were the best people to handle it!

Illinois: The main function of the board of health was to examine and license physicians. There was however also a lodging house inspector for Chicago.

Kentucky: The board of health was composed of representatives of the regular, homeopathic, eclectic and osteopathic medical groups. It was therefore a privately and not publicly appointed board.

Nebraska: In 1913, 81 cases of scarlet fever were reported of which *84* died!

In half the states, the funds earmarked for communicable disease could only be used in case of serious epidemics, usually of cholera or yellow fever. This was the "fire department" type of public health.

Malaria: This was a disease of first importance with millions of cases and thousands of deaths. Few preventive measures were taken till about 1915 after a survey by the Public Health Service, which inaugurated experiments in minor drainage for mosquito control. There had been spotty efforts at mosquito control dating from the early 1900's by some communities. California was one of the first to initiate malaria control measures under W. B. Herms and Harold Gray in 1910, followed by the first mosquito abatement districts in 1916. But in our South, there was complete apathy. However, malaria cases were often placarded, since to prevent placarding, physicians often called typhoid-fever cases malaria.

Smallpox was everywhere. Vaccination was not enforced in schools and several boards of health in desperation at not securing state laws to support them, abandoned quarantine entirely to shock the public into some reaction.

Venereal disease—zero. The only epidemology practiced in the United States concerned itself with smallpox—not typhoid, diphtheria or venereal disease in spite of their prevalence.

Tuberculosis was in the hands of private physicians and laymen (the National Tuberculosis Association). The well-to-do were sent to sanatoriums. Most laymen and many doctors doubted that it could be communicated from one person to another.

Child Hygiene: There were no pediatricians,* who are the real health officers of the growing family. The attention was focused on improving milk for children, but Strauss in New York and Adelaide Brown in San Francisco fought an uphill fight for pasteurization and certification. Public health nurses did not really become a factor until after World War I, and the Goldmark Report, published in 1923. Local Red Cross units had funds left over after the war, which they were persuaded to spend on nurses.

Public Health Education: Chapin said that what there was, was mainly dishonest and untruthful.

Per Capita Expenditure: Here we come to the nub of the matter.

Florida was first, with 15 cents—the only state to assess a mill tax for health, spent by politicians. (Florida was far down Chapin's rating list); Pennsylvania second—13 cents; Massachusetts a poor third with 5 cents; New York fourth—3 cents; and

* This was not true in 1913. Witness, Rotch, Jacobi and others, Ed.

so on down to Tennessee—0.7 cent; Arkansas—0.5 cent; and New Mexico—0.0 cent.

Only seven states appropriated more than 5 cents and these made a curious collection of advanced and backward communities; Florida, Idaho, Maryland, Montana, Nevada, Pennsylvania and Vermont. Abstracted from article *"Public Health Reminiscences"* by Lewis W. Hackett, Public Health News, New Jersey, Dec., 1952, pp. 233-234, by *C.H.K.*

* * * * *

Teeth vs. Candy.—Dentistry generally agrees that dental caries is caused, to put it simply, by the action of certain bacteria on fermentable carbohydrates, the bacterial action taking place under a dental plaque on the surfaces of teeth. The bacterial action on fermentable carbohydrates releases an acid of such concentration beneath the dental plaque that tooth structure in that specific area is dissolved. This is the beginning process of dental caries. Therefore, in the light of what we know now we must assume that any fermentable carbohydrates taken into the mouth may be acted upon by specific bacteria which form the acid that initiates the caries process.

This means that if dental caries is to be reduced to the greatest possible extent, all fermentable carbohydrates should be removed from the diet. This is not practical nor possible except under research conditions. We must be practical about all of our health teaching. It is true that many sweets are served in the schools. We probably cannot elimate them all. Since candy is seldom considered a dessert or part of a meal but more often as a "between meal snack" and is mostly refined carbohydrate and adds little to the child's nutrition, why should schools sell it to children?

A good well organized school dental health program will teach children and parents and the community that sweets (candy) are not beneficial to oral health and that excess use of sweets interferes with their general health. If schools are teaching these facts then they should make the school environment compatible with their teaching. The sale of candy in schools is not compatible with such teaching.

I believe that it is the responsibility of the schools to strengthen the moral integrity of our children, and I believe the schools should provide learning experiences which will do this. Teaching that candy is detrimental to oral health and then selling candy in the school will certainly raise a question in the child's mind of the integrity of the teaching received, especially if the child knows that the sale of candy is for the purpose of raising money for some school activity. We are seeing too much lack of acute discrimina-

tion between what is known to be right and what it overtly done.

If children bring candy to school with them or run across the street to the store, it does not mean that that practice should be accepted by the school. It means the health or dental health program must be improved. It should be considered a challenge by those in school health work to improve their health education programs.

I certainly agree with the statement "Pediatricians have long said that *if* children are going to eat sweets it should be after meals rather than between or before meals." *If* children are going to eat sweets, after meals is the best time. Then it does no interfere wih appetite and they can *brush their teeth very soon after eating*. This practice of brushing teeth as soon as possible after eating any food is a sound dental health measure because it helps remove the food debris that helps initiate the caries process. I do not understand the reasoning that because children are given the opportunity to buy candy after lunch or any other time, it is hard to control when they eat it. If the school lunch is adequate, children will no be very hungry and will put the candy in their pockets to eat later in the day. To carry this further—if the school lunch is nutritionally adequate, children do not need candy or sweets after lunch, therefore why should the school sell it? The school lunch can and should be a learning experience in proper diet and nutrition. The sale of candy before, during or after lunch is not compatible with such a learning experience.

The statements, "From the teaching standpoint it seems that to limit the amount of candy and have it at mealtime is better than placing a ban on it. Prohibitions teach nothing and humans love to defy them" are contradictory. If the amount of candy is limited a ban has been placed on it, therefore, according to the statement nothing is taught because "prohibitions teach nothing". But that is not the basic point. The basic point is that such practice is not sound health teaching. If the child is taught that sweets, candy especially, are detrimental to teeth then sell it to him in school, even in limited amount, it is the same as saying, "Candy is not good for your teeth but eat it anyway—we don't believe what we teach." Also, a large amount of candy eaten at one time does not necessarily do more dental damage than the constant eating of candy throughout the day. In fact, the latter would do more harm because the fermentable carbohydrate is thus constanly available to the bacteria that form the acid that etches the tooth enamel.

I believe that candy should not be sold in schools because:

1. Schools should practice what they teach.

2. If good dental health is taught in the schools the sale of candy by the schools is incompatible with such teaching.

3. The schools should make good dental health learning experiences available to the children. The sale of candy is not in this category.

4. The school lunch can and should be made a learning experience for children and parents in eating for health.

5. A good school dental health program should motivate children and parents to the realization and acceptance of the fact that dental health cannot be given by dentistry or by schools, nor can it be bestowed or legislated by local, State, or Federal Governments, but that it must be won and maintained through each individual's own efforts in cooperation with the dental facilities available. Lloyd F. Richards, D.D.S., M.P.H., Member, Governing Council, American School Health Association.

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Medical Examinations For Athletes.—Amateur boxing has been comparatively free of difficulties because of wise precautions taken by those responsible for such events. Professional boxers, however, are in need of more medical help than is now being generally provided. At a recent meeting of physicians interested in boxing held in New York City under the sponsorship of the Athletic Commission, it was suggested that physicians, at least in that state, should have sufficient authority to protect injured boxers from greedy, ignorant,, or unscrupulous handlers. The chairman of the medical advisory board of the State Commission, Dr. Marvin A. Stevens, suggested that closer medical supervision would help prevent serious injury, even death.

It is the opinion of many physicians that the high incidence of deaths and injuries that occur in the boxing ring is due to the slipshod and cursory medical examinations hastily conducted before bouts and the failure to perform thorough medical checkups after bouts. Unfortunately, there has never been a coordinated effort to reduce the number of fatalities and to lower the incidence of severe accidents and disabling injuries.

The five deaths in professional boxers that occurred in New York State in the past three years were all due to cerebral hemorrhage. One boxer in addition had a multiple fracture of the skull. One autopsy showed a rupture of a pial vessel. It has been firmly established that head trauma, cerebral damage, and cerebral hemorrhage are the most frequent causes of death in professional boxers. The boxing gloves that deal out the lethal blows need to

be definitely improved so that a greater measure of protection is offered to the boxer's brain, skull, and mandible. It is reported that some boxing authorities have refused to support any such changes because of the fear that there would be a decreased incidence of knockouts, which they think are essential for the sport to retain its popularity.

Reform and improvement in the medical aspects of boxing, as well as medical supervision of these athletes before and after bouts, cannot be achieved by the efforts made in one or two states. The National Boxing Association has thus far failed to interest the boxing commissions in other states in a health maintenance and safety program along the broad lines being carried out in New York State at the present time.

Football authorities years ago established a fatality and accident study committee that has made a genuine effort to analyze the causes of death in football. This committee has already effected a 50% reduction in the fatality rate. In boxing there is no effort being made officially to record the annual death rate, to conduct precise analytical studies of the causes of death in the ring, and to institute remedies to improve the protective equipment. This disinterest and neglect requires serious consideration, and the National Boxing Association should immediately establish a similar continuous medical study through an accident and fatality committee. Abstracted from Editorial, *Journal American Medical Association*, December 13, 1952, p. 1490.

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Mortality Reductions During A Half Century,—The following comments are based on a summary of Bulletin 92, "Mortality Trends in the United States, 1900-1949."

The decline in the general mortality rate from 17.2 (deaths per thousand) in 1900 to only 9.6 in 1950 is only the starting point for analysis. A small portion of the 20 year increase in life expectancy at birth resulted from mortality gains at the higher ages; for example, the 22 percent drop in mortality at ages 65 to 74 accounted for 2 percent of the increase.

Although the mortality rate from all causes combined has declined for every age group since 1900, the number of deaths per thousand from heart diseases has increased for all age groups over 35, from cancer for every age group, and from diabetes for age groups over 45. Some of these increases are the result of improved diagnoses of the causes of death and changes in record keeping. Many deaths in 1900 that would have been attributed

to ill-defined causes would, under present-day procedures, have been attributed to heart diseases, cancer, or diabetes.

The authors point out again that although heart diseases account for more than five times as many deaths as accidents and twice as many life years lost, nevertheless, fatal accidents in 1948, as in 1945 and in 1940, cut off more years from the working lifetimes of the American people than any major cause of death. Accident prevention lags far behind medical progress.

In this century the average age at death from each of the major causes of death has risen. The seven leading causes now account for three-fourths of our deaths, as compared with only one-half in 1900. Abstracted from Editorial, Journal A.M.A., Oct. 4, 1952, p. 492.

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School Health Notes,—A total of 13,870 Pennsylvania Children given medical examinations last spring and summer prior to their enrollment in the first grade were reported to have remediable physical defects. It is interesting to note that protection against the children diseases in this group was provided as follows: Diphtheria 7,228; Whooping Cough 6,921; Scarlet Fever 1,042; Tetanus 5,867; Typhoid Fever 875; Measles 3; Tuberculosis 1.

This report indicates the need for parents to have their children immunized during the colder months of the year, including vaccination against smallpox, which is required for school entrance. The examination itself should be completed before the onset of hot weather since the follow-up treatment of defects discovered in the child is greatly retarded by the disinclination of most physicians to recommend surgical care when poliomyelitis is prevalent. The objective of this program should be to have all remediable defects corrected before school entrance.

Common colds account for more discomfort and school absence than any other health menace. Here are a few simple rules which will keep colds under control—

Always put on a covering when you are overheated.
Keep out of drafts.
Keep your feet dry.
If you have a cold be a good citizen—cover your mouth when you cough or sneeze.
Wash your face and hands frequently.

By John W. Gearman, Jr., Chief School Division, Pennsylvania State Department of Health, from *Pennsylvania Health*, October-December, p. 8.

REVIEWS

Health Instruction Yearbook, 1952. *Oliver E. Byrd, Ed.D., M.D.,* Stanford University Press, Stanford, California, $3.50.

This is the tenth yearbook of this nature.

It is designed to keep the reader up to date in such health factors as nutrition, exercise, fatigue, mental health, etc., through a list of twenty-one chapter topics presenting the most recent authentic information concerning them.

Probably the most interesting Chapter from the point of view of readers of the Journal of School Health is Chapter XVII—School Health. In this are not only abstracts from many recent reports and scientific articles—several of which appeared in the Journal of School Health—but the exposure of several fallacies.

This is a valuable text for teachers and other workers in the School Health Program, not only because it presents up-to-date information, but because in doing so it smashes old superstitions and deflates much of the propaganda with which health information is loaded.—C. H. Keene

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The Rhythic Program for Elementary Schools. *Grace Fielder.* The C. V. Mosby Company, 1952, St. Louis. 244 pp. Price $3.50.

This text—designed for use at the college and university level in training potential teachers, and for use by classroom teachers and supervisors in the elementary schools—is a compilation of numerous rhythms and dances giving both descriptions and music.

As a preliminary to these, it gives brief chapters on the History of Dancing, Rhythm and Rhythm Experience, Pattern and Design of Music, and on Principles and Methods of Teaching.

This is a much worthwhile book of instructions and collection of rhythms and dances.—C. H. Keene

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Health, Happiness, Success Series; *Leslie W. Irwin, Ph.D., Waid W. Tuttle, Ph. D., and Carolyn DeKever,* B.S. Chicago, Lyons and Carnahan, 1952. "Awake and Away," "Growing Day by Day," "Keeping Fit For Fun." These three are a series planned for lower elementary grades. The basic effort is the establishment and continuation of good habits in matters affecting health; cleanliness, teeth, sleep, play, food, etc. The statements in each case are emphasized and made interesting by clever colored illustrations, largely in the form of action pictures. The first "Awake and Away," has little reading material. As the series

progresses through lower grade school, the amount of reading is increased.

These are excellent productions in an area of health education where there is very little worthwhie printed or pictured material designed for school use. They merit very careful consideration by school administrators desiring to emphasize and to make more cohesvie the health education efforts in the lower primary grades.

From the school and the school health side, too, the illustrations and typography are clear, with as little as possible strain on vision, and are printed in slightly off-white color with dull finish, so there is no glare or other avoidable eyestrain. C. H. Keene.

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MEETING

New York State Association of School Physicians, Lake Placid, June 1-3, 1953.

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